CMD 25-M35 - CNSC Staff Status Update to the Commission

CNSC Staff Review of OPG's Commissioning Results of Processing and Storing Dry Storage Containers Containing 6-Year Cooled Fuel at the Pickering Waste Management Facility

Classification	UNCLASSIFIED
Type of CMD	Status Update
CMD Number	25-M35
Reference CMD(s)	24-H102
Public meeting date	October 7, 2025
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Summary	CMD 25-M35 provides a status update to the Commission on CNSC staff's review of OPG's commissioning results of processing and storing dry storage containers containing 6-year cooled nuclear fuel at the Pickering Waste Management Facility. As per the Record of Decision (DEC 24-H102) for CMD 24-H102, CNSC staff were directed by the Commission to report on OPG's commissioning results.
Actions required	There are no actions requested of the Commission. This CMD is for information only.

CMD 25-M35

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Signed by:

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Luc Sigouin
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CNSC Staff Review of OPG's Commissioning Results of Processing and Storing Dry Storage Containers Containing 6-Year Cooled Fuel at the Pickering Waste Management Facility

Canadian Nuclear Safety Commission

MEMORANDUM NOTE DE SERVICE

To / A: Candace Salmon
Commission Registrar / Président

CMD 25-M35#
ccm# GEN-006973
Fully releasable
ATIP : Yes

From / De: X

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2025.08.19 11:54:16 -04'00'

Luc Sigouin
Director General | Directeur général

Subject: CNSC Staff Review of OPG's Commissioning Results of Processing and Storing Dry Storage Containers Containing 6-Year Cooled Fuel at the Pickering Waste Management Facility

1. PURPOSE

As requested in the Record of Decision DEC 24-H102 [1], the purpose of this status update is to provide an update to the Commission on Canadian Nuclear Safety Commission (CNSC) staff review of Ontario Power Generation's (OPG's) commissioning results of processing and storing two dry storage containers (DSCs) containing 6-year cooled nuclear fuel at the Pickering Waste Management Facility (PWMF).

2. BACKGROUND

In June 2023, OPG submitted an application requesting that the Commission amend OPG's PWMF licensing basis, to authorize OPG to process and store a maximum of 100 DSCs (at a time) containing a minimum of 6-year cooled nuclear fuel at the PWMF [2]. This is a change from the approved storing of 10-year cooled fuel.

In April 2024, following the review of OPG's application, CNSC staff submitted CMD 24-H102 [3] recommending that the Commission amend the PWMF licensing basis.

On August 3, 2024, the Commission amended OPG's PWMF licensing basis, authorizing OPG to process and store a maximum of 100 DSCs (at a time) containing a minimum of 6-year cooled nuclear fuel [1]. Item #116 of the Record of Decision DEC 24-H102 for CMD 24-H102 states the following: "*To confirm that the temperature and dose rate thresholds pertaining to dry storage containers are satisfied, the Commission directs OPG to provide dose rates and temperature measurements for both the weld surface and seal tube collected during commissioning of 2 to 4 dry storage containers, containing 6-year cooled fuel, with a comparison to predictions to CNSC staff no later than 30 days following the collection of data.*

The Commission directs CNSC staff to report to the Commission on the results of the dose rate surveys and measured outer surface and weld surface temperatures of the first dry storage container containing a minimum of 6-year cooled fuel. This information shall also be presented to the Commission at a public meeting of the Commission" [1].

Following the Commission decision, CNSC staff updated the PWMF Licence Conditions Handbook (LCH) as specified in part 2 of CMD 24-H102 [4].

As per the PWMF LCH [4], OPG committed to providing to CNSC staff the dose rate survey results and temperature measurements of the initial loading of two to four DSCs, and that OPG only proceed from commissioning after CNSC staff review the field measurements and conclude that the results are acceptable.

On December 11, 2024, OPG submitted the commissioning results report on the processing and storing of two DSCs containing 6-year cooled nuclear fuel with comparisons to predicted values [5].

3. DISCUSSION

OPG completed the commissioning of two DSCs containing 6-year cooled nuclear fuel at the PWMF from August to November 2024. The results of the commissioning were documented in a report and provided to CNSC staff on December 11, 2024.

CNSC staff reviewed OPG's report which included a comparison of the measured data to predictions from the thermal analysis and dose rate assessment, and to historical data from DSC #24 loaded with 6-year cooled nuclear fuel at the PWMF in 1998.

The following sections summarize OPG's commissioning test results of the DSCs and CNSC staff's review and conclusions. OPG demonstrated acceptable results in the following areas:

DSC Surface Temperature

OPG used the same temperature measurement locations on the two commissioning DSCs to compare the results with the historical data from DSC #24. OPG took temperature measurements over three weeks after loading the two commissioning DSCs with 6-year cooled nuclear fuel and during the different stages of DSC processing.

The thermal profile of the two commissioning DSCs is similar to the 1998 DSC #24, with overall lower temperatures. Based on modeling, the thermal analysis had predicted a worst case, conservative maximum surface temperature of 86°C for the DSCs. This aligned with OPG's expectation that the results would be closer to the historical data (DSC #24) than the thermal analysis prediction, as the conditions of the worst-case modeling were intended to provide a highest possible temperature, and not a temperature to be expected under normal conditions.

Weld Surface Measurement

During DSC processing, Phased Array Ultrasonic Testing (PAUT) is performed as a weld inspection. OPG's existing equipment requires the weld surface temperature to be below 50°C to perform the inspection.

After four days of cooling, the weld on the first commissioning DSC reached 38.8°C on the long side (includes lifting plates) and 33.7°C on the short side (does not include lifting plates). After 12 days of cooling, the weld surface temperatures on the second commissioning DSC were 32.4°C on the long side and 35.0°C on the short side. The two commissioning DSCs successfully cooled below the 50°C threshold to conduct PAUT.

Seal Tube Measurements

The maximum seal tube temperature measurements for the two commissioning DSCs were 39.3°C and 35.1°C, both below the International Atomic Energy Agency (IAEA) required threshold of 70°C for proper seal application. The IAEA inspectors were able to successfully apply the safeguard seals. Furthermore, the seal tube inlet and outlet dose rate measurements were lower than the dose rate assessment predictions.

DSC Surface Dose Rate

Gamma and neutron measurements were taken shortly after loading and again after commissioning at various distances from the different sides of each DSC. The measured values closely matched the predicted values.

CNSC staff reviewed OPG's commissioning results report and found the results to be satisfactory (i.e., in agreement with the predicted values).

4. CONCLUSION

OPG provided dose rates and temperature measurements for the weld surface and seal tube collected during commissioning of two to four DSCs containing 6-year cooled nuclear fuel [5]. CNSC staff reviewed OPG's report on the commissioning results of the two DSCs. As a result of the review, CNSC staff conclude that the results are acceptable. CNSC staff provided a written acceptance for OPG to proceed with processing and storing a maximum of 100 DSCs (at a time) containing a minimum of 6-year cooled nuclear fuel at the PWMF. This concludes CNSC staff's update to the Commission.

5. REFERENCES

[1] Record of Decision, DEC 24-H102, Application to Amend the Pickering Waste Management Facility (PWMF) Licensing Basis to Process and Store a Maximum of 100 Dry Storage Containers Containing a Minimum of 6-year Cooled Fuel at the PWMF, August 3, 2024, e-Doc 7371397.

[2] OPG Letter, K. Aggarwal to D. Saumure, "OPG – Change Request Application for Amendment to the Pickering Waste Management Facility (PWMF) Waste Facility Operating Licence WFOL W4-350.00/2028", June 20, 2023, CD # 92896-CORR- 00531-01478, e-Doc 7068976.

[3] CNSC Staff CMD 24-H102, Licensing Basis Amendment, April 8, 2024, e-Doc 7256089.

[4] Pickering Waste Management Facility Licence Conditions Handbook: LCH-W4- 350.00/2028, March 7, 2025, e-Doc 7477093.

[5] OPG Letter, K. Aggarwal to N. Greencorn, Pickering Waste Management Facility - Submission of the Report on the Results of Commissioning Loading of 6-year Cooled Fuel, December 11, 2024, e-Doc 7424997. **[CONFIDENTIAL]**